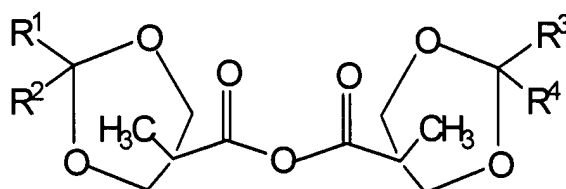


**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

**Claim 1.** (Withdrawn) An anhydride having the structure:



wherein,

$\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$ , and  $\text{R}^4$  are members independently selected from substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl and substituted or unsubstituted aryl.

**Claim 2.** (Withdrawn) The anhydride according to claim 1, wherein each of  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$ , and  $\text{R}^4$  is an independently selected  $\text{C}_1$ - $\text{C}_6$  unsubstituted alkyl group.

**Claim 3.** (Withdrawn) The anhydride according to claim 2, wherein said unsubstituted alkyl group is a member selected from the group consisting of methyl, ethyl and propyl.

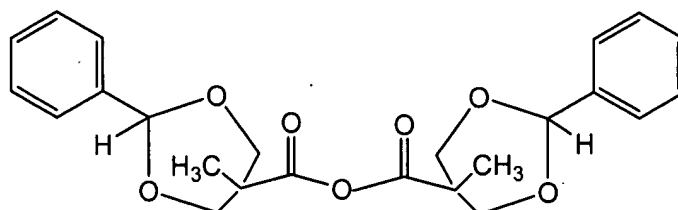
**Claim 4.** (Withdrawn) The anhydride according to claim 1, wherein said anhydride is a solid, which is substantially free of coupling reagent derived side products.

**Claim 5.** (Withdrawn) The anhydride according to claim 1, prepared by a method consisting essentially of:

- (a) combining benzylidene-2,2-bis(methoxy)propanoic acid,  $\text{N,N}'$ -dicyclohexylcarbodiimide and an organic solvent, thereby forming a reaction mixture in which said anhydride is formed;

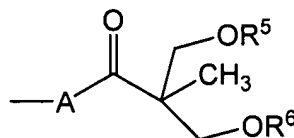
- (b) filtering said reaction mixture, thereby removing precipitated dicyclohexylurea from said reaction mixture;
- (c) precipitating said anhydride from said reaction mixture by contacting said reaction mixture with a hydrocarbon solvent, thereby producing said anhydride.

**Claim 6.** (Withdrawn) An anhydride having the structure:



**Claim 7.** (Withdrawn) The anhydride according to claim 6, wherein said anhydride is a solid and is substantially free of coupling reagent derived side products.

**Claim 8.** (Currently Amended) A composition of matter consisting essentially of a plurality of dendrimers, wherein said composition of matter comprises dendrimer which is substantially free of urea side products, said dendrimer comprising a subunit having the structure:



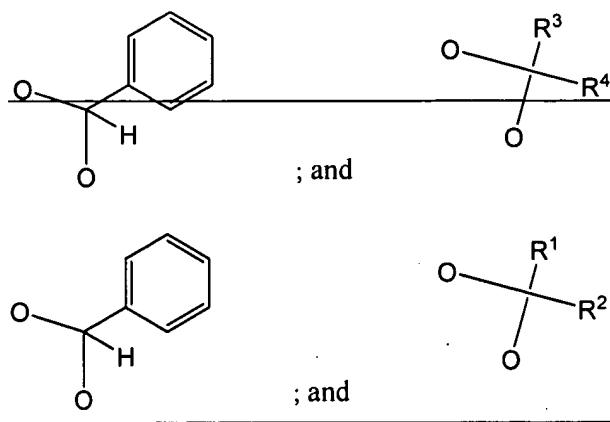
wherein

said composition of matter is free of urea side products

~~A is an active group, which~~ is a member selected from NH, S and O;

R<sup>5</sup> and R<sup>6</sup> are members independently selected from the group consisting of H, diagnostic agents, therapeutic agents, analytical agents, and moieties comprising a reactive group

wherein R<sup>5</sup> and R<sup>6</sup> together with the oxygen atoms to which they are attached optionally form a structure which is a member selected from the group consisting of:



wherein

R<sup>1</sup> and R<sup>2</sup> are members independently selected from substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl and substituted or unsubstituted aryl.

**Claim 9.** (Currently amended) The composition of matter dendrimer according to claim 8, wherein A is a component of a polymer.

**Claim 10.** (Currently amended) The composition of matter dendrimer according to claim 9, wherein said polymer is a member selected from the group consisting of nucleic acids, linear poly(alkylene oxides), star poly(alkylene oxides), polysaccharides, poly(amino acids) and poly(hydroxystyrene).

**Claim 11.** (Currently amended) The composition of matter dendrimer according to claim 10, wherein said polysaccharide is a member selected from cyclodextrin, starch, hydroxyethyl starch and dextran.

**Claim 12.** (Currently amended) The composition of matter dendrimer according to claim 10, wherein said poly(amino acid) comprises lysine, tyrosine, serine, cysteine, arginine, histidine and combinations thereof.

- Claim 13.** (Currently amended) The composition of matter dendrimer according to claim 9, wherein said polymer is a synthetic organic polymer with pendant NH groups, OH groups, SH groups and combinations thereof.
- Claim 14.** (Currently amended) The composition of matter dendrimer according to claim 13, wherein said synthetic organic polymer is a member selected from poly(vinylphenol), poly(hydroxymethacrylate), poly(N-2-hydroxypropylmethacrylamide), poly(diallylamine), poly(lactic acid) and poly(hydroxymethylcaprolactone), poly(4-hydroxyethylcaprolactone).
- Claim 15.** (Currently amended) The composition of matter dendrimer according to claim 8, wherein at least one of said R<sup>5</sup> and R<sup>6</sup> is a therapeutic agent, and wherein said therapeutic agent is a member selected from the group consisting of antiproliferative agents, proteins, anti-cancer chemotherapeutic agents, antibiotics, antivirals, and antiparasitics.
- Claim 16.** (Currently amended) The composition of matter dendrimer according to claim 8, wherein at least one of said R<sup>5</sup> and R<sup>6</sup> is a diagnostic agent, and wherein said diagnostic agent is a member selected from MRI contrast agents, X-ray contrast agents, CT contrast agents, PET contrast agents, ultrasonography contrast agents, fluorescent agents, chromophoric agents and radioisotopes.
- Claim 17.** (Currently amended) The composition of matter dendrimer according to claim 8, wherein said subunit repeats from 2 to 100 times.
- Claim 18.** (Currently amended) The composition of matter dendrimer according to claim 17, wherein said subunit repeats from 4 to 50 times.
- Claim 19.** (Currently amended) The composition of matter dendrimer according to claim 18, wherein said subunit repeats from 8 to 24 times.

CC(=O)NNCC(=O)NN=R7

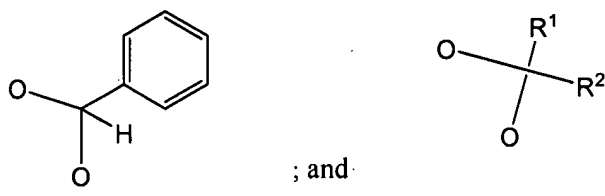
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said composition of matter is free of urea side products

A is a member selected from NH, S and O;

R<sup>5</sup> and R<sup>6</sup> are members independently selected from the group consisting of H, diagnostic agents, therapeutic agents, analytical agents, and moieties comprising a reactive group

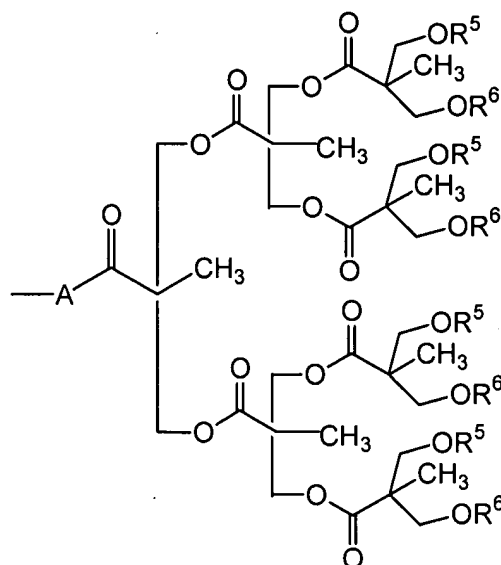
wherein R<sup>5</sup> and R<sup>6</sup> together with the oxygen atoms to which they are attached optionally form a structure which is a member selected from the group consisting of:



wherein

R<sup>1</sup> and R<sup>2</sup> are members independently selected from substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl and substituted or unsubstituted aryl.

**Claim 25.** (Currently amended) A composition of matter consisting essentially of a plurality of dendrimers, wherein said composition of matter comprises ~~dendrimer~~ comprising a subunit having the structure:



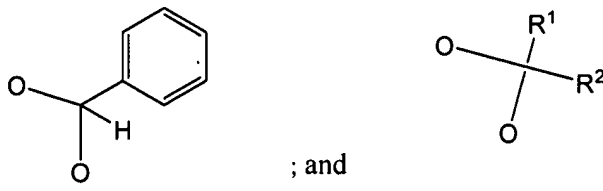
wherein

said composition of matter is free of urea side products

A is a member selected from NH, S and O;

R<sup>5</sup> and R<sup>6</sup> are members independently selected from the group consisting of H, diagnostic agents, therapeutic agents, analytical agents, and moieties comprising a reactive group

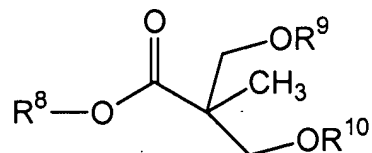
wherein R<sup>5</sup> and R<sup>6</sup> together with the oxygen atoms to which they are attached optionally form a structure which is a member selected from the group consisting of:



wherein

R<sup>1</sup> and R<sup>2</sup> are members independently selected from substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl and substituted or unsubstituted aryl.

**Claim 26.** (Withdrawn) A dendrimer having the structure:



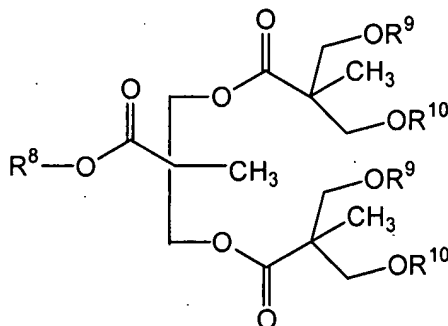
wherein,

$R^8$  is a nucleic acid; and

$R^9$  and  $R^{10}$  are members independently selected from H and a poly(ethylene oxide) residue.

**Claim 27.** (Withdrawn) The dendrimer according to claim 26, said dendrimer being substantially free of urea side products.

**Claim 28.** (Withdrawn) A dendrimer comprising the structure:



wherein,

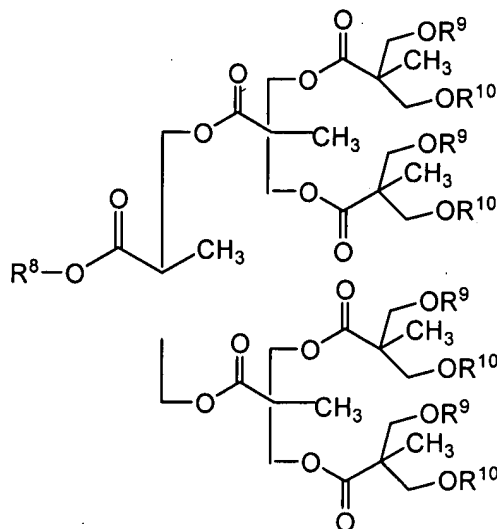
$R^8$  is a nucleic acid; and

$R^9$  and  $R^{10}$  are members independently selected from H and a poly(ethylene oxide) residue.

**Claim 29.** (Withdrawn) The dendrimer according to claim 28, said dendrimer being substantially free of urea side products.



**Claim 30.** (Withdrawn) A dendrimer comprising the structure:



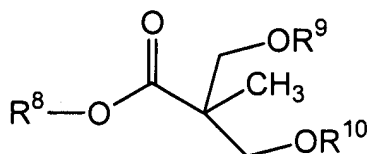
wherein,

R<sup>8</sup> is a nucleic acid; and

R<sup>9</sup> and R<sup>10</sup> are members independently selected from H and a poly(ethylene oxide) residue.

**Claim 31.** (Withdrawn) The dendrimer according to claim 30, said dendrimer being substantially free of urea side products.

**Claim 32.** (Withdrawn) A biological compartment comprising a membrane defining an interior space, said interior space comprising a dendrimer comprising a subunit having the structure:

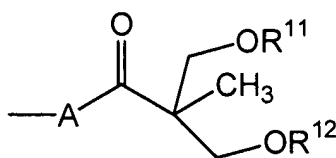


wherein,

R<sup>8</sup> is a nucleic acid; and

R<sup>9</sup> and R<sup>10</sup> are members independently selected from H and a poly(ethylene oxide) residue.

**Claim 33.** (Withdrawn) A biological compartment comprising a membrane defining an interior space, said interior space comprising a dendrimer comprising a subunit having the structure:



wherein,

A is a residue of an active group; and

R<sup>11</sup> and R<sup>12</sup> are members independently selected from the group consisting of H, therapeutic agents and diagnostic agents.

**Claim 34.** (Withdrawn) The biological compartment according to claim 33, wherein said therapeutic agent is a member selected from the group consisting of antiproliferative agents, proteins, anti-cancer chemotherapeutic agents, antibiotics, antivirals, nucleic acids, and antiparasitics.

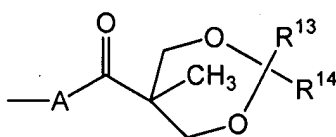
**Claim 35.** (Withdrawn) The biological compartment according to claim 33, wherein said diagnostic agent is a member selected from MRI contrast agents, X-ray contrast agents, CT contrast agents, PET contrast agents, ultrasonography contrast agents, nucleic acids, fluorescent probes, chromophoric probes and radioisotopes.

**Claim 36.** (Withdrawn) The biological compartment according to claim 33, wherein A is a residue of a core moiety, and said core moiety is a poly(alkylene oxide) residue.

**Claim 37.** (Withdrawn) The biological compartment according to claim 36, wherein said core moiety is a poly(ethylene oxide) residue.

**Claim 38.** (Withdrawn) The biological compartment according to claim 33, wherein said biological compartment is a member selected from cells and organelles.

**Claim 39.** (Withdrawn) A method of producing a protected first generation dendrimer substantially free of urea side products, said dendrimer comprising a subunit having the structure:

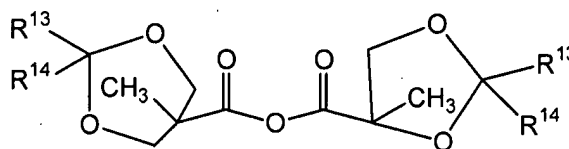


wherein,

A is an active group residue selected from NH, O and S on a core moiety; and  
 $R^{13}$  and  $R^{14}$  are components of a diol protecting group and are members independently selected from H, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl and substituted or unsubstituted aryl, with the proviso that when  $R^{13}$  is H,  $R^{14}$  is other than H;

said method comprising:

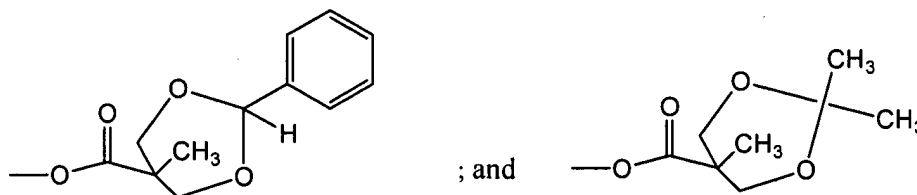
(a) forming a reaction mixture by contacting a core moiety comprising A with an acylating group in an organic solvent, said acylating group having the structure:



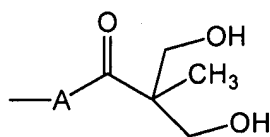
thereby acylating A, forming said dendrimer; and

(b) extracting said reaction mixture with an aqueous solution, thereby removing impurities.

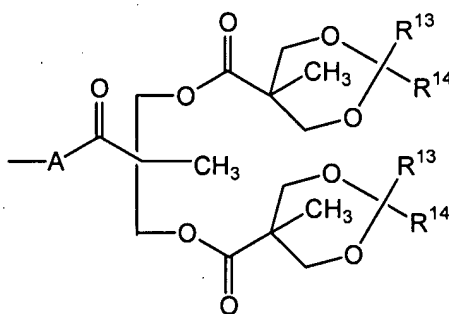
**Claim 40.** (Withdrawn) The method according to claim 39, wherein said subunit is a member selected from the group consisting of:



- Claim 41.** (Withdrawn) The method according to claim 39, further comprising:  
(c) removing said diol protecting group, thereby forming a first generation dendrimer comprising a subunit having the structure:



- Claim 42.** (Withdrawn) A dendrimer prepared by the method according to claim 41.
- Claim 43.** (Withdrawn) The dendrimer according to claim 42, wherein said dendrimer is a solid.
- Claim 44.** (Withdrawn) A method of producing a protected second generation dendrimer substantially free of urea side products, said dendrimer comprising a subunit having the structure:

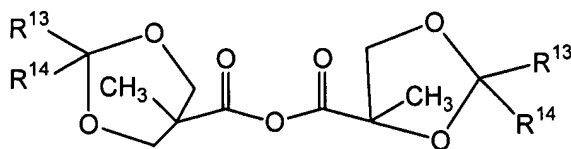


wherein,

A is an active group selected from NH, O and S on a core moiety; and  
R<sup>13</sup> and R<sup>14</sup> are components of a diol protecting group and are members independently selected from H, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl and substituted or unsubstituted aryl, with the proviso that when R<sup>13</sup> is H, R<sup>14</sup> is other than H;

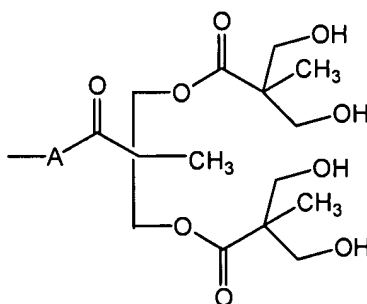
said method comprising:

- (a) contacting said first generation dendrimer according to claim 41 with an acylating group having the structure:



thereby acylating A, forming said dendrimer; and  
(b) extracting said reaction mixture with an aqueous solution, thereby removing impurities.

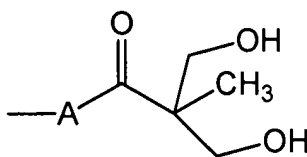
**Claim 45.** (Withdrawn) The method according to claim 44, further comprising:  
(c) removing said diol protecting group, thereby forming a second generation dendrimer comprising a subunit having the structure:



**Claim 46.** (Withdrawn) A dendrimer prepared by the method according to claim 44.

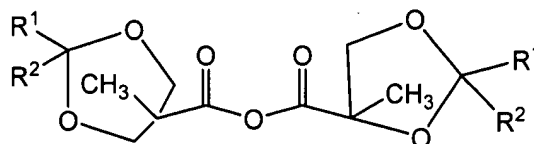
**Claim 47.** (Withdrawn) The dendrimer according to claim 46, wherein said dendrimer is a solid.

**Claim 48.** (Withdrawn) A method of enhancing water solubility of an agent, said method comprising forming a conjugate between said agent and a dendrimer comprising a subunit having the structure:



**Claim 49.** (New) The composition of matter of claim 8, wherein said dendrimers are produced by a process comprising:

(a) forming a reaction mixture by contacting a core moiety comprising A with an acylating group in an organic solvent, said acylating group having the structure:



thereby acylating A, forming said dendrimer; and

(b) extracting said reaction mixture with an aqueous solution, thereby removing impurities.

**Claim 50.** (New) The composition of matter according to claim 49, wherein A is a component of a polymer.

**Claim 51.** (New) The composition of matter according to claim 50, wherein said polymer is a member selected from the group consisting of nucleic acids, linear poly(alkylene oxides), star poly(alkylene oxides), polysaccharides, poly(amino acids) and poly(hydroxystyrene).

**Claim 52.** (New) The composition of matter according to claim 49, wherein at least one of said R<sup>5</sup> and R<sup>6</sup> is a therapeutic agent, and wherein said therapeutic agent is a member selected from the group consisting of antiproliferative agents, proteins, anti-cancer chemotherapeutic agents, antibiotics, antivirals, and antiparasitics.

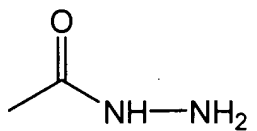
**Claim 53.** (New) The composition of matter according to claim 49, wherein at least one of said R<sup>5</sup> and R<sup>6</sup> is a diagnostic agent, and wherein said diagnostic agent is a member selected from MRI contrast agents, X-ray contrast agents, CT contrast agents, PET contrast agents, ultrasonography contrast agents, fluorescent agents, chromophoric agents and radioisotopes.

**Claim 54.** (New) The composition of matter according to claim 49, wherein said subunit repeats from 2 to 100 times.

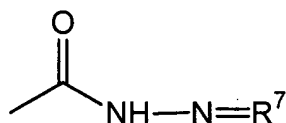
**Claim 55.** (New) The composition of matter according to claim 54, wherein said subunit repeats from 4 to 50 times.

**Claim 56.** (New) The composition of matter according to claim 55, wherein said subunit repeats from 8 to 24 times.

**Claim 57.** (New) The composition of matter according to claim 49, wherein at least one of  $R^5$  and  $R^6$  has the structure:



**Claim 58.** (New) The composition of matter according to claim 49, wherein at least one of  $R^5$  and  $R^6$  has the structure:



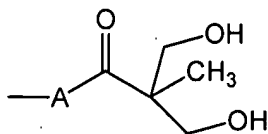
wherein,  $R^7$  is a member selected from the group consisting of diagnostic agents, therapeutic agents and analytical agents.

**Claim 59.** (New) The composition of matter according to claim 58, wherein  $R^7$  is a doxorubicin derivative.

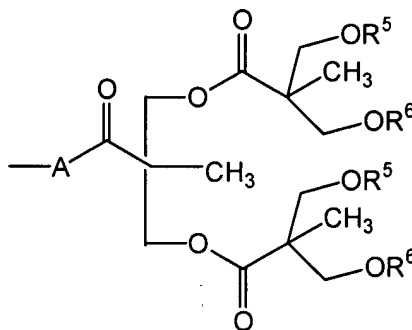
**Claim 60.** (New) A pharmaceutical formulation comprising the composition of matter according to claim 49 and a pharmaceutically acceptable carrier.

**Claim 61.** (New) The composition of matter according to claim 49, produced by a process which further comprises:

(c) removing said diol protecting group, thereby forming a first generation dendrimer comprising a subunit having the structure:



**Claim 62.** (New) A composition of matter consisting essentially of a plurality of dendrimers, wherein said composition of matter comprises a subunit having the structure:



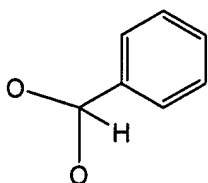
wherein

said composition of matter is free of urea side products

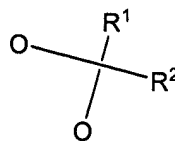
A is a member selected from NH, S and O;

R<sup>5</sup> and R<sup>6</sup> are members independently selected from the group consisting of H, diagnostic agents, therapeutic agents, analytical agents, and moieties comprising a reactive group

wherein R<sup>5</sup> and R<sup>6</sup> together with the oxygen atoms to which they are attached optionally form a structure which is a member selected from the group consisting of:



; and



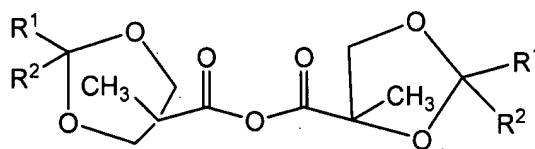
wherein



$R^1$  and  $R^2$  are members independently selected from substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl and substituted or unsubstituted aryl;

wherein said dendrimers are produced by a process comprising:

- (a) contacting said first generation dendrimer according to claim 61 with an acylating group having the structure:



thereby acylating A, forming said dendrimer; and

- (b) extracting said reaction mixture with an aqueous solution, thereby removing impurities.

**Claim 63.** (New) The composition of matter according to claim 62, produced by a process which further comprises:

- (c) removing said diol protecting group, thereby forming a second generation dendrimer comprising a subunit having the structure:

